DIRECT TESTIMONY OF

JOSEPH M. LYNCH

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2009-2-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND CURRENT POSITION.

A. Joseph M. Lynch, 1426 Main Street, Columbia, South Carolina. My current position is Manager of Resource Planning, SCANA Services, Inc.

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I graduated from St. Francis College in Brooklyn, New York with a Bachelor of Science degree in mathematics. From the University of South Carolina, I received a Master of Arts degree in mathematics, a Masters in Business Administration and a Ph.D. in management science and finance. In 1977, I was employed by South Carolina Electric & Gas Company ("SCE&G" or the "Company") as a Senior Budget Analyst to develop econometric models to forecast electric sales and revenue. In 1980, I was promoted to Supervisor of the Load Research Department, and in 1985, I became Supervisor of Regulatory Research where I was responsible for load research and electric rate design. In

1989, I became Supervisor of Forecasting and Regulatory Research, and, in 1991, I was promoted to my current position of Manager of Resource Planning.

Q. BRIEFLY SUMMARIZE YOUR CURRENT DUTIES.

A. As manager of Resource Planning, I am responsible for producing SCE&G's forecast of energy, peak demand and revenue; for developing the Company's generation expansion plans; and for overseeing the Company's load research program.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to discuss the Company's short-range energy sales forecast methodology and to explain how SCE&G simulates the operation of its power plants to generate the required energy and project the resulting fuel requirements for the system.

Q. DESCRIBE THE COMPANY'S SHORT-RANGE ENERGY FORECASTING PROCESS.

A. Each summer, the Company updates its short-range and long-range sales forecast as part of its annual planning cycle. The long-range sales forecast refers to the forecast for the full twenty-year planning horizon. The short-range sales forecast refers to the forecast for the first two years of the planning horizon and is projected on a month-by-month basis. In preparing the short-range sales forecast, the Company divides its customers into detailed forecasting groups defined by rate and class. Where possible, customers are further divided into electric space heating and non-electric space heating groups. Residential customers are further

separated into those living in either single-family, multi-family or mobile homes. SCE&G also forecasts consumption for about twenty of its largest industrial customers on an individual basis while the balance are separated into 2-digit SIC groups, the most detailed of which are shown in Exhibit No.__ (JML-1). Where a detailed customer group contains a large number of homogeneous customers, separate econometric models are developed to project the number of customers and the average use per customer based on such factors as population growth, and levels of economic activity within SCE&G's service territory. All residential groups and small commercial groups are projected in this way.

Weather is a significant factor in the residential and commercial models and projections are based on normal weather where normal is defined as the average taken over the last 15 years. Overall, nearly 100 econometric and statistical models are utilized to develop the short-run forecast.

Q. IS YOUR ENERGY FORECASTING METHODOLOGY TYPICAL FOR THE INDUSTRY?

A. Yes, our use of multiple regression and statistical time-series models is fairly standard throughout the industry.

Q. HOW ACCURATE HAS YOUR ENERGY FORECASTING METHODOLOGY BEEN?

A. Over the past ten years, the mean absolute percent error (MAPE) has been 1.4% when comparing the forecast to the weather-normalized actual consumption of energy on our system.

Q. EXPLAIN HOW YOU TRANSLATE THIS ENERGY SALES FORECAST INTO A FORECAST OF FUEL REQUIREMENTS FOR THE ELECTRIC SYSTEM.

A. We simulate the dispatch of our generating units with the software program PROSYM. PROSYM is licensed with Global Energy Decisions, Inc. and is a well-accepted tool in the industry being used by over 100 utilities.

Q. DISCUSS THE PROSYM MODEL INPUTS.

A. The following are key inputs to the model:

1. Energy Sales Forecast: The energy sales forecast consists of the monthly short-term forecast I previously discussed. This information is used to create forecasts of hourly loads based on historical hourly load profiles.
2. Fuel Price Data: The SCE&G Fossil/Hydro Procurement Department provides a forecast of monthly fuel prices for coal and oil and the SCE&G Nuclear Fuel Management Department provides a forecast of monthly nuclear fuel prices. Fuel price data includes transportation costs and sulfur content of coal and a gas price forecast is created using the NYMEX natural gas futures prices. Expected gas transportation costs are also added to the NYMEX prices to create a forecast of the delivered cost of gas.
3. Generator Operating Parameters: Generator operating parameters include heat rate, capacity, maintenance outage schedule, forced

outage rate, and operating constraints. Operating constraints include variables such as minimum up and down times, ramp rates, and start costs. All of these variables control the cost and feasibility of dispatching each unit each hour.

4. Market Prices: The market prices for power are input into the model to reflect the opportunities that SCE&G has to purchase power at prices below its marginal cost of generation or to sell power above its marginal cost of generation.

Exhibit No. ___ (JML-2) graphically displays these inputs.

Q. EXPLAIN HOW PROSYM MODELS THE ELECTRIC SYSTEM.

A. PROSYM is a chronological hourly dispatch model. In each hour of a study period, PROSYM arranges all the available supply sources from lowest cost to highest and then determines the least-cost way to meet the customer load in that hour while considering a complex set of operating constraints. As part of this dispatching process, PROSYM also simulates random unscheduled outages of our plants based on the forced outage rates that were part of the input database.

Q. AFTER RUNNING THE PROSYM MODEL, WHAT IS THE NEXT STEP IN YOUR PROCESS?

A. As more fully discussed by Company Witness Rooks and for the purpose of these proceedings, the PROSYM model output that defines how the SCE&G electric system will meet the projected electric load is passed to the Rate Department, which develops the appropriate fuel factor for SCE&G rates. The

specific data items that are passed to the Rate Department are plant generation, plant average heat rate, heat content of the coal, capacity factors by unit, off system purchases and sales, and associated market prices. These model outputs form an appropriate basis for projecting fuel costs for the forecast period in this proceeding.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

Exhibit No.___(JML-1)

Short-Term Forecasting Groups

Class Number	Class Name	Rate/SIC Designation	Comment
		Single Family	Rates 1, 2, 5, 6, 8, 18, 25, 26, 62, 64
10	Residential Non-Space Heating	Multi Family	Rates 67, 68, 69
910	Residential Space Heating	Mobile Homes	Rates 1, 2, 5, 7, 8
20	Commercial Non-Space Heating	Rate 9	Small General Service
		Rate 12	Churches
		Rate 20, 21	Medium General Service
		Rate 22	Schools
		Rate 24	Large General Service
		Other	Rates 10, 11, 14, 16, 17, 18, 24, 25, 26, 29, 60, 62, 64, 67, 68, 69
920	Commercial Space Heating	Rate 9	Small General Service
30	Industrial Non-Space Heating	Rate 9	Small General Service
		Rate 20, 21	Medium General Service
		Rate 23, SIC 22	Textile Mill Products
		Rate 23, SIC 24	Lumber, Wood Products, Furniture and Fixtures (SIC Codes 24 and 25)
		Rate 23, SIC 26	Paper and Allied Products
		Rate 23, SIC 28	Chemical and Allied Products
		Rate 23, SIC 30	Rubber and Miscellaneous Products
		Rate 23, SIC 32	Stone, Clay, Glass, and Concrete
		Rate 23, SIC 33	Primary Metal Industries; Fabricated Metal Products; Machinery; Electric and Electronic Machinery, Equipment and Supplies; and Transportation Equipment (SIC Codes 33-37)
		Rate 23, SIC 91	Executive, Legislative and General Government (except Finance)
		Rate 23, SIC 99	Other or Unknown SIC Code*
		Rate 27, 60	Large General Service
		Other	Rates 25 and 26
930	Industrial Space Heating	Rate 9	Small General Service
60	Street Lighting	Rates 3, 9, 13, 17, 25, 26, 29, and 69	
70	Other Public Authority	Rate 3 and 29	
		Rates 65 and 66	
92	Municipal	Rate 60, 61	Four Individual Accounts
97	Cooperative	Rate 60, 61	Three Individual Accounts

* Includes small industrial customers from all SIC classifications that were not previously forecasted individually.

Note: Industrial Rate 23 also includes Rate 24. Commercial Rate 24 also includes Rate 23.

Exhibit No. _____ (JML-2)